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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/768,569	01/29/2004	David Cotter	UK03-002	7052
22928	7590	10/16/2007	EXAMINER	
CORNING INCORPORATED			KIM, DAVID S	
SP-TI-3-1			ART UNIT	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/768,569	COTTER ET AL.
	Examiner	Art Unit
	David S. Kim	2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 06 August 2007.

2a) This action is **FINAL**.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-12 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-12 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

- Certified copies of the priority documents have been received.
- Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
- Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.

5)  Notice of Informal Patent Application  
6)  Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Priority***

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Europe on 31 January 2003. It is noted, however, that applicant has not filed a certified copy of the European Patent Application Serial No. 03250617.2 as required by 35 U.S.C. 119(b). In Applicant's most recent response (filed on 06 August 2007), Applicant indicates the intention to submit the certified copy.

### ***Claim Rejections - 35 USC § 112***

2. Applicant's response to the rejection of claim 5 in the previous Office Action (mailed on 01 February 2007) is noted and appreciated. Applicant responded by amending claim 5. Applicant's response overcomes the previous rejection, which is presently withdrawn.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. **Claims 1-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Healey et al. ("Spectral slicing WDM-PON using wavelength-seeded reflective SOAs", hereinafter "HealeyEL") in view of the Healey et al. (U.S. Patent Application Publication No. US 2003/0007207 A1, hereinafter "HealeyUS").

**Regarding claim 1,** HealeyEL discloses:

An optical network comprising:

a central source (EDFA in Fig. 1) providing light in a plurality of spaced wavelength bands (the broadband output of the EDFA spans any number of spaced wavelength bands);

plural distributed terminals (modulators in Fig. 1) operable to modulate and return received light in any of the said wavelength bands; and

a wavelength-routed network (right-side DWDM in Fig. 1) receiving light in all the said wavelength bands from the central source and routing each wavelength band to a respective one of the terminals.

HealeyEL does not expressly disclose:

the central source including variable-gain optical amplifiers enabling the relative intensity of light in respective wavelength bands to be varied.

However, such a source is known in the art, as shown by HealeyUS (Fig. 2). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement the central source teachings of HealeyUS in the network of HealeyEL. One of ordinary skill in the art would have been motivated to do this since the central source teachings of HealeyUS provide the benefit of channel equalization and so minimize the overall signal dynamic range, which leads to a minimized effect of crosstalk (HealeyUS paragraph [0039]).

**Regarding claim 2,** HealeyEL in view of the HealeyUS discloses:

An optical network as claimed in claim 1 in which the variable-gain optical amplifiers are an array of semiconductor optical amplifiers (HealeyUS, SOAs in Fig. 2) and are followed by a wavelength-division multiplexer (HealeyUS, 17 in Fig. 2) for receiving their outputs and passing them together to the wavelength-routed network.

**Regarding claim 3,** HealeyEL in view of the HealeyUS discloses:

An optical network as claimed in claim 2 in which the semiconductor optical amplifiers are also preceded by a wavelength-division demultiplexer (HealeyUS, 9 in Fig. 2) receiving light from a single multi-band source (HealeyUS, 1 in Fig. 2).

**Regarding claim 4,** HealeyEL in view of the HealeyUS discloses:

An optical network as claimed in claim 1 in which the central source is a spectral-slicing source (HealeyUS, paragraph [0037], “spectrally slices”) in which light in a continuous range of wavelengths is generated and spaced wavelength bands selected from it.

**Regarding claim 5,** HealeyEL in view of the HealeyUS discloses:

An optical network as claimed in claim 4 in which the light generator is selected from the group consisting of rare-earth doped fibre amplifiers, semiconductor optical amplifiers, super-continuum sources, mode-locked lasers superluminescent diodes, other light-emitting diodes of sufficient optical power and spectral bandwidth, and wavelength combs (HealeyUS, paragraph [0100]).

**Regarding claim 6,** HealeyEL in view of the HealeyUS discloses:

An optical network as claimed in claim 5 comprising wavelength-division multiplexers for slicing to obtain the required spaced wavebands, said multiplexers being selected from the group consisting of arrayed-waveguide gratings, thin-film filters, directional couplers, and filters of the blazed-grating type (HealeyUS, paragraph [0102]).

**Regarding claim 7,** HealeyEL in view of the HealeyUS discloses:

An optical network as claimed in claim 1 in which at least some terminals each comprise a reflection modulator (HealeyEL, reflective amplifier modulators in Fig. 1).

**Regarding claim 8,** HealeyEL in view of the HealeyUS discloses:

An optical network as claimed in claim 1 in which all the terminals are substantially identical (HealeyEL, the reflective amplifier modulators in Fig. 1 are implied to be substantially identical as no substantial difference is noted).

**Regarding claim 9,** HealeyEL in view of the HealeyUS discloses:

An optical network as claimed in claim 1 in which the said wavelength-routed network is entirely passive (HealeyEL, p. 1181, col. 2, last paragraph, DWDM in Fig. 1 is a thin film filter, which is passive).

**Regarding claim 10**, claim 10 is a method claim that corresponds largely to the apparatus claim

1. Therefore, the recited means in apparatus claim 1 read on the corresponding steps in method claim 10.

Claim 10 also includes limitations absent from claim 1. HealeyEL in view of the HealeyUS discloses these limitations:

adjusting the said variable optical amplifiers individually to determine the level of light reaching the respective terminals (HealeyUS, paragraph [0039]).

**Regarding claims 11-12**, claims 11 and 12 are claims that introduce limitations that correspond to the limitations introduced by claims 1 and 10, respectively. Therefore, the recited limitations in claims 1 and 10 read on the corresponding limitations in claims 11-12.

#### Response to Arguments

6. Applicant's arguments filed on 06 August 2007 have been fully considered but they are not persuasive. Applicant presents two salient points.

**Regarding the first point**, Applicant states:

"As the Examiner has noted, Healy et al does not disclose the 'central source... including variable-gain optical amplifiers enabling the relative intensity of light in respective wavelength bands to be varied.' The Examiner relies upon the disclosure of Healy US to supplement Healy et al, to teach the recited source. Applicants respectfully submit that Healy US does not teach or disclose the source as recited in claim 1, and that the combination of the teachings of Healy et al and Healy US do not render the network recited in claims 1 and 11 unpatentable.

According to Healy et al, '[a]n erbium doped amplifier (EDFA) was used as a centralised broadband source of un-polarised amplified spontaneous emission' (page 2). The corresponding source, in Healy US, is the 'optical source for generating broadband radiation' (paragraph 10) which is '[p]referably... an erbium-doped fiber amplifier' (paragraph 17). The source (that is, the amplifier) is represented as 'erbium doped amplifier 1' in FIG. 1 of Healy US (paragraph 34) and in FIG. 2 (paragraph 36). Thus Healy US uses the same source shown in Healy et al, and does not suggest or teach the source recited in claim 1 and 11" (REMARKS/ARGUMENTS, p. 6, two middle paragraphs).

Examiner respectfully notes that the standing rejections indicate Fig. 2 as "the central source", not just EDFA 1 in Fig. 2, which is only a part of Fig. 2. Accordingly, this point is not persuasive.

**Regarding the second point**, Applicant states:

"While FIG. 1 of Healy US shows 'semiconductor optical amplifiers 13' and FIG. 2 of Healy US shows 'semiconductor optical amplifiers 15,' in each case these are disclosed as modulators, used to impress a signal on the light from the source (paragraphs 25-36), and correspond to the 'reflective SOA' modulators of Figure 2 in Healy et al, not to the EDFA source. The system shown in Figure 2 of Healy et al already has a modulator for each channel. One of ordinary skill would not be motivated to add modulators such as those of Healy US, which would be redundant. Conversely, Healy US also provides a modulator for every channel in the form of

SOAs as part of a transmitter. One of ordinary skill would not be motivated to add modulators such as those of Healy et al, which would be redundant. For at least these reasons, Applicants respectfully submit that Healy et al alone or together with Healy US does not disclose the source and the device or method as a whole as recited in claims 1 and 11, and that claim 1, and claims 2-9 which depend therefrom, together with claim 11, are allowable" (REMARKS/ARGUMENTS, p. 6-7, bridging paragraph).

Examiner respectfully notes that the standing rejections recognize that the "semiconductor optical amplifiers 15" in Fig. 2 of HealeyUS and the "reflective SOA" modulators in Fig. 1 of HealeyEL are not equivalent, and thus, not redundant. Notice that the "semiconductor optical amplifiers 15" in Fig. 2 of HealeyUS operate with the rest of the elements in Fig. 2 to provide the benefit of channel equalization and so minimize the overall signal dynamic range, which leads to a minimized effect of crosstalk (HealeyUS paragraph [0039]), as stated in the treatment of claim 1 above. In contrast, there is no mention of channel equalization through the use of the "reflective SOA" modulators in Fig. 1 of HealeyEL. Moreover, notice that the "semiconductor optical amplifiers 15" in Fig. 2 of HealeyUS operate with the rest of the elements in Fig. 2 to transmit data (HealeyUS, paragraph [0045]) *away* from the central transmitter (HealeyUS, output fiber 19 in Fig. 2). In contrast, the "reflective SOA" modulators in Fig. 1 of HealeyEL operate to transmit data *toward* the central transmitter. Clearly, modulators, such as those of HealeyUS, would not be redundant. Accordingly, this point is not persuasive.

**Summarily**, Applicant's arguments are not persuasive. Accordingly, Examiner respectfully maintains the standing rejections.

### Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 571-272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth N. Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DSK



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SUPERVISORY PATENT EXAMINER